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# CURRENT LITERATURE.

## BOOK REVIEWS.

### The organography of plants.

A FEW months ago we had the pleasure of receiving the first part of Goebel's *Organographie der Pflanzen*. The hope that was then expressed<sup>1</sup> is now in a measure realized by the publication of the first section of the second part.<sup>2</sup> This section is devoted to the bryophytes. In the general part the author sought to picture the fundamental principles of organ formation, illustrated by a few examples. In the special part he seeks to carry out the plan in greater detail, so far as concerns the archegoniates and seed plants.

At the outset he meets the question, "in what relation organ formation stands to adaptation, or, in other words, whether the specific characters which separate the individual species, genera, etc., in any order, are of an adaptive nature only, as the extreme believers in the importance (*Bedeutung*) of natural selection think, or whether specific and adaptive characters are to be distinguished." Goebel expresses the positive conviction that the latter is the case, holding that, although "organization must, of course, always meet the life demands, the characteristic impress which it bears in every group, in spite of all the variety in the special adaptive external conformation, shows that the 'inner constitution'—if we may use this expression to hide our ignorance—plays the most important rôle, even were the polymorphism of organ formation not comprehensible." When, however, an adaptive character appears in all, or almost all, the members of the group, *e. g.*, the thallus structure in Marchantiaceæ, there arises a difficulty which the author dismisses with these words: "this is to be considered more than an accidental coincidence with the specific characters; an agreement, indeed, which one can make thoroughly intelligible only when one supposes the adaptation to be ancient, having taken place before there occurred a separation of the group in question into forms developing in different directions." This, of course, one of those "extreme believers in the importance of natural selection" (from whose ranks Goebel excludes himself), would call a begging of

<sup>1</sup> See review in this journal, 25 : 290. 1898.

<sup>2</sup> GOEBEL, K.—*Organographie der Pflanzen*, insbesondere der Archegoniaten und Samenpflanzen. Zweiter Teil : Spezielle Organographie. 1 Heft : Bryophyten. 8vo. pp. 283–385. *figs.* 131–359. Jena : Gustav Fischer. 1898. *M* 3.80.

the question! Is it conceivable that the "inner constitution" is anything more than the aggregate result of ancient adaptations?

Here is another sentence which seems to strike a false note in its implications. "All speculations, proceeding from the highly developed archegoniates, as to the connection of liverworts and mosses, bryophytes and pteridophytes, etc., are, therefore, only products of the poetic imagination, arising from our mental necessity of assuming connections even where they cannot be directly observed, but having no adequate support in the facts of experience. Their sole value consists in that they incite to the raising of new questions." What higher value, we may ask, has any hypothesis?

We shall have concluded all adverse criticism when we further point out that in this section, much more than in the general part, the author yields to the seductive temptation to assign definite purposes to certain organs, and to say: this is an adaptation for thus and so, with the same airy grace to which we have become accustomed in Haberlandt's *Physiologisches Pflanzenanatomie*. One can hardly help thinking, like Cato, "It must be so: Plato, thou reasonest well; else, whence this. . . ." Yet, all the while, there is a subconscious certainty that the solution is too easy, and that, in some measure at least, we are listening to fairy tales — "lediglich Produkte dichterischer Phantasie," to use the phrase Goebel has given us. We are unpleasantly reminded of the outgrown teleology by this new attempt to explain

The reasons of things —  
Why Injuns wore rings,  
In their red aboriginal noses.

We cite only one example (p. 242): "I entertain no doubt that the mucilage filling the neck-canal [of the archegonium] protects the egg chiefly against contact with water." Can one avoid asking evidence that there is need for protection of the egg against contact with water, and, if that is furnished, demanding proof that water movement is restricted by this mucilage when it is not by other kinds?

But it is in the clear stream that one discerns the snags along its bed, while turbid waters hide their dangers. On the whole, this section of the work is, like its predecessor, most interesting, suggestive, and valuable. The new point of view for the discussion of the bryophytes is the striking feature. We have grown used to the purely formal standpoint — even to the *Standpunkt der Mikrotomtechnik* — which, the author well declares, "is greatly inferior to the apprehension of nature by the great bryologist of the preceding century, Hedwig, whose view was not yet narrowed by the verbal blinders, morphology and physiology." And so the facts which the author sets before us are presented in a new light. Seen in this way they are certain to suggest new investigations. No higher result can be sought or obtained from such a book, and none so sure to redound to the permanent fame of the author.

Moreover, the book is far from a review of already published facts. It sets before the reader a great number of new investigations of much interest, illustrated by many new figures, whose freshness is as invigorating as a sea breeze. To one who restates in better form our old knowledge, and adds so much that is new, it is easy to forgive the possible slight distortion of perspective which we shall easily escape when at a greater distance from the facts. It is only bare justice to recognize in this work a master hand, and to hail it as one of the books predestined to become a classic. — C. R. B.

### A new school botany.

It is a good sign when university professors interest themselves in secondary education. Too often text-books for high schools have been prepared by those who do not know the subject; and it may be further stated that occasionally text-books have been prepared by college men who do not know the schools. That happy combination of experience which brings together the two kinds of knowledge is demanded for the preparation of such books.

Almost every university will be represented presently by a botanical text-book for the secondary schools. In the opinion of the reviewer, the chief criticism to offer in reference to most of these books is that they attempt to present too great an abundance of material, and also material that is too difficult. It is hard for the average college man to appreciate how unfamiliar the material of modern botany is to the young student of the secondary school. A rapid succession of facts, all of which are new to his experience, is too apt to result in bewilderment rather than knowledge.

The last candidate in this field is from the pen of Professor Atkinson,<sup>3</sup> of Cornell University, who shows an appreciation of the situation, and who has certainly had a large and successful experience with elementary classes. The book is a hard one to criticise, as it is a combination of commendable and careless features. Some of the features that should receive warm commendation are wealth of illustration, short paragraphs with distinct headings, originality of presentation, and especially the ecological chapters upon soil formation, zonal distribution, and occupation of land. Certainly so many commendable features more than justify the publication of the book.

On the other hand, carelessness of statement and want of logical organization are apparent. This carelessness amounts frequently to error. The lack of organization is indicated on the surface by such facts as that the division of the book devoted to physiology has received no title and part number, such as have been given to Morphology and Ecology; and that the matter included

<sup>3</sup> ATKINSON, GEORGE FRANCIS. — *Elementary Botany*. Small 8 vo. pp. xxiii + 444. *figs.* 509. New York: Henry Holt & Co. \$1.25.